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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,096	09/25/2006	Yasushi Okubo	06660/HG	8903

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FRISHAUF, HOLTZ, GOODMAN & CHICK, PC
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EXAMINER	
HIGGINS, GERARD T	

ART UNIT	PAPER NUMBER
1785	

MAIL DATE	DELIVERY MODE
04/07/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,096	OKUBO ET AL.	
	Examiner	**Art Unit**	
	GERARD T. HIGGINS	1785	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 January 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-19* is/are pending in the application.

4a) Of the above claim(s) *5,6 and 9-17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,7,8,18 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed 01/26/2010 has been entered. Currently claims 1 and 4-19 are pending and claims 5, 6, and 9-17 are withdrawn.

Please note that on line 2 of claim 1 there is no comma in between "a transparent plastic film" and "a gas barrier layer," which is a change that has not been shown with proper strikethrough notation; however, a comma would be appropriate at this place of the claim, and the Examiner will interpret the claim with the comma. Please note that any future claim set should have this comma, otherwise a claim objection will be made.

Claim Objections

2. Applicant is advised that should claim 4 be found allowable, claim 18 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). The Examiner does not see any difference between the terms “contains” and “comprises” because they are both transitional phrases that are open to the inclusion of other materials. Please see section 5 below.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 18 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 18, the claim depends from cancelled claim 2 and is therefore indefinite. For the purposes of examination, the claim will be interpreted as depending from independent claim 1.

Claim Rejections - 35 USC § 103

6. Claims 1, 4, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai et al. (JP 10-309770), machine translation previously included, in view of Yuasa et al. (JP2000-192246), as evidenced by applicants' own admissions.

With regard to claims 1, 4, and 18, Sakai et al. disclose a transparent electric conduction sheet, which reads on applicants' transparent conductive film, for display devices [0001]. The article is comprised of a gas barrier film, which reads on applicants' gas barrier layer, a hardenability resin sheet, which reads on applicants' transparent plastic film, and a conducting film, which reads on applicants' transparent conductive layer [0009].

The Examiner clearly envisages using the resin of Formula (2) by itself to form a sheet, as is suggested by Sakai et al. [0016]. Sakai et al. teach that such a sheet will have an index of refraction of 1.47-1.51 [0016].

The gas barrier film may be formed from the inorganic oxides seen at [0032], including silicon oxide and titanium oxide.

Sakai et al. also teach that the conducting film may be ITO [0031]. As evidenced by applicants' own admissions, ITO has an index of refraction of 2.05 (page 13, lines 25-27).

Sakai et al. teach at [0048] that the order of the layers is not limited and may be "a gas barrier film between a hardenability resin sheet and a conducting film;" however, they fail to disclose that the gas barrier layer has a refractive index that continuously or stepwise decreases from a surface being in contact with the transparent conductive layer to a surface being in contact with the transparent plastic film.

Yuasa et al. teach that it is known to vary the percentage of silicon dioxide and titanium dioxide within a functionally gradient optical film [0012], [0035], and [0069].

Since Sakai et al. and Yuasa et al. are both drawn to optical materials; it would have been obvious to one having ordinary skill in the art at the time the invention was made to have designed the gas barrier layer of Sakai et al. to be a gradient gas barrier film of silicon oxide and titanium oxide as taught by Yuasa et al. It would have been obvious to one having ordinary skill in the art to have designed the gas barrier film to be a gradient optical film, wherein the refractive indices on either surface of the gas barrier film matched that of the layer adjacent to that surface. Such a construction would have

been obvious because one of ordinary skill would have recognized that matching of the refractive index at boundary regions would have reduced thermal stress such that the optical film did not crack; furthermore, there would be less reflection of light at such a boundary regions.

This arrangement would then have the refractive index arrangement be the following: a resin sheet (1.47-1.51), a gas barrier film that has a refractive index matching the resin sheet, i.e. 1.47-1.51, on one surface and matching the conducting film, i.e. 2.05 on the other surface, and a conducting film (2.05). This arrangement intrinsically satisfies applicants' limitations that the "refractive index is controlled so that the refractive index continuously or stepwise decreases from one of the two surfaces of the transparent conductive film having the transparent conductive layer to the other of the two surfaces of the transparent conductive film." The Examiner deems that the article of Sakai et al. meets the limitation that the "refractive index is controlled" because any resultant article that possesses the refractive index gradient claimed will necessarily have to have been controlled, i.e. manufactured, with said gradient in both the transparent conductive film overall and the gas barrier layer specifically.

With specific regard to claim 19, the reason it would have been obvious to have used titanium dioxide and silicon dioxide as the two gas barrier materials in the gradient gas barrier layer is that they possess indices of refraction that would easily enable them to match the indices of refraction of the adjacent layers; furthermore, they are both inexpensive materials.

7. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai et al. (JP 10-309770), machine translation previously included, in view of Yuasa et al. (JP2000-192246), as applied to claim 1, and further in view of Ito et al. (JP 2003-303520), as evidenced by applicants' own admissions.

Sakai et al. in view of Yuasa et al. render obvious all of the limitations of applicants' claim 1 in section 5 above; however, they do not teach a transparent plastic film comprised of cellulose acetate or that the transparent plastic film has a glass transition temperature of 180 °C or more.

Ito et al. disclose a transparent conducting film, which reads on applicants' transparent conductive film and the transparent electric conduction sheet of Sakai et al. in view of Yuasa et al. Ito et al. teach that their substrate, which reads on applicants' transparent plastic film or the resin sheet of Sakai et al. in view of Yuasa et al., may be formed from an acrylic resin or a cellulose triacetate resin [0110].

Since Sakai et al. in view of Yuasa et al. and Ito et al. are drawn to transparent conducting films; it would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted the acrylic resins of Sakai et al. in view of Yuasa et al. with the cellulose triacetate resins of Ito et al. The results of such a substitution would have been predictable to one having ordinary skill as these resins are recognized equivalents by Ito et al. The resulting structure a resin sheet (1.47-1.51), a gas barrier film that has a refractive index matching the resin sheet, i.e. 1.47-1.51, on one surface and matching the conducting film, i.e. 2.05, on the other surface, and a

conducting film (2.05) would continue to intrinsically satisfy the refractive index limitations of claim 1.

With regard to claim 7, cellulose triacetate will intrinsically possess a glass transition temperature of 180 °C or more as evidenced by applicants' own admissions at (page 41, lines 1-11).

8. Claims 1, 4, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai et al. (JP 10-309770), machine translation previously included, as evidenced by applicants' own admissions, in view of Van der Werf et al. (4,568,140) and Yuasa et al. (JP 2000-192246).

With regard to claims 1, 4, and 18, Sakai et al. disclose a transparent electric conduction sheet, which reads on applicants' transparent conductive film, for display devices [0001]. The article is comprised of a gas barrier film, which reads on applicants' gas barrier layer, a hardenability resin sheet, which reads on applicants' transparent plastic film, and a conducting film, which reads on applicants' transparent conductive layer [0009].

Sakai et al. disclose that the resins of Formula (1) and Formula (2) may be used by itself to form a sheet [0016]. Sakai et al. teach that a sheet formed from the resin of Formula (1) will have an index of refraction of 1.54-1.65 and a sheet formed from the resin of Formula (2) will have an index of refraction of 1.47-1.51 [0016].

The gas barrier film may be formed from the inorganic oxides seen at [0032], including silicon oxide and titanium oxide.

Sakai et al. also teach that the conducting film may be ITO [0031]. As evidenced by applicants' own admissions, ITO has an index of refraction of 2.05 (page 13, lines 25-27).

Sakai et al. teach at [0048] that the order of the layers is not limited and may be "a gas barrier film between a hardenability resin sheet and a conducting film;" however, Sakai et al. do not specifically set forth that the materials for the resin sheet, gas barrier film, and conducting film should be chosen to satisfy the refractive index limitations of claim 1.

Van der Werf et al. teach that antireflection coatings should have the materials chosen such that the substrate material would have an index of refraction that is as high as possible and a surface layer that is as low as possible (col. 5, lines 1-12). This is done to ensure that the reflection curves are as low as possible, i.e. the least amount of reflection, and that these low reflection values are achieved over the widest possible range of wavelengths.

Since Sakai et al. and Van der Werf et al. are both drawn to optical materials; it would have been obvious to one having ordinary skill in the art at the time the invention was made to have designed the transparent conductive film of Sakai et al., i.e. the resin sheet/gas barrier film/conducting film structure, with a continuous or stepwise decrease of refractive index from the conducting film to the resin sheet. One of ordinary skill would recognize that the conductive film of the transparent conductive film would be located furthest away from a viewer of the laminate, i.e. the innermost layer. The reason to have the refractive index decrease continuously or stepwise is for the same

reason as explicitly taught by Van der Werf et al., which is to ensure that the reflection curves are as low as possible, i.e. the least amount of reflection, and that these low reflection values are achieved over the widest possible range of wavelengths (col. 5, lines 1-12).

Yuasa et al. teach that it is known to vary the percentage of silicon dioxide and titanium dioxide within a functionally gradient optical film [0012], [0035], and [0069].

Since Sakai et al. in view of Van der Werf et al. and Yuasa et al. are drawn to optical materials; it would have been obvious to one having ordinary skill in the art at the time the invention was made to have designed the gas barrier layer of Sakai et al. in view of Van der Werf et al. to be a gradient gas barrier film of silicon oxide and titanium oxide as taught by Yuasa et al. It would have been obvious to one having ordinary skill in the art to have designed the gas barrier film to be a gradient optical film, wherein the refractive indices on either surface of the gas barrier film matched that of the layer adjacent to that surface. Such a construction would have been obvious because one of ordinary skill would have recognized that matching of the refractive index at boundary regions would have reduced thermal stress such that the optical film did not crack; furthermore, there would be less reflection of light at such a boundary regions.

With specific regard to claim 19, the reason it would have been obvious to have used titanium dioxide and silicon dioxide as the two gas barrier materials in the gradient gas barrier layer is that they possess indices of refraction that would enable them, in proper ratios, to match the indices of refraction of the adjacent layers; furthermore, they are both inexpensive materials.

9. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai et al. (JP 10-309770), machine translation previously included, in view of Van der Werf et al. (4,568,140) and Yuasa et al. (JP 2000-192246), as applied to claim 1 above, and further in view of Ito et al. (JP 2003-303520), as evidenced by applicants' own admissions.

Sakai et al. in view of Van der Werf et al. and Yuasa et al. render obvious all of the limitations of applicants' claim 1 in section 7 above; however, they do not teach a transparent plastic film comprised of cellulose acetate or that the transparent plastic film has a glass transition temperature of 180 °C or more.

Ito et al. disclose a transparent conducting film, which reads on applicants' transparent conductive film and the transparent electric conduction sheet of Sakai et al. in view of Van der Werf et al. Ito et al. teach that their substrate, which reads on applicants' transparent plastic film or the resin sheet of Sakai et al. in view of Van der Werf et al., may be formed from an acrylic resin or a cellulose triacetate resin [0110].

Since Sakai et al., Van der Werf et al., Yuasa et al., and Ito et al. are drawn to transparent conducting films; it would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted the acrylic resins of Sakai et al. in view of Van der Werf et al. and Yuasa et al. with the cellulose triacetate resins of Ito et al. The results of such a substitution would have been predictable to one having ordinary skill as these resins are recognized equivalents by Ito et al. The resulting structure of a resin sheet (1.47-1.51), a gas barrier film that has a refractive

index matching the resin sheet, i.e. 1.47-1.51, on one surface and matching the conducting film, i.e. 2.05, on the other surface, and a conducting film (2.05) would continue to satisfy the refractive index limitations of claim 1.

With regard to claim 7, cellulose triacetate will intrinsically possess a glass transition temperature of 180 °C or more as evidenced by applicants' own admissions at (page 41, lines 1-11).

Response to Arguments

10. Applicant's arguments, see Remarks, filed 01/26/2010, with respect to the rejection of claims 19 under 35 U.S.C. 112, second paragraph has been fully considered and are persuasive. The relevant rejection has been withdrawn.

11. Applicant's arguments filed 01/26/2010 have been fully considered but they are not persuasive.

Applicants argue, generally, that the Examiner has no reason to modify the references as set forth in the rejection and that the combined references would not result in the claimed invention.

The Examiner respectfully disagrees and notes that the Examiner has set forth specific rationales to combine each of the references in the obviousness rejections set forth above. The rationale to form a gas barrier layer having a continuous functionally gradient material is that one of ordinary skill would have recognized that matching of the refractive index at boundary regions would have reduced thermal stress such that the

optical film did not crack; furthermore, there would be less reflection of light at such a boundary regions. Applicants have not specifically pointed to any flaw in the applicants' rejections or logic; furthermore, the Examiner maintains that the references in combination intrinsically or explicitly teach the refractive index variations of applicants' claims.

The Examiner maintains that the references Sakai et al. and Yuasa et al. intrinsically set forth the refractive index variation in the overall laminate set forth in applicants' claim 1. The principles of optical diffraction/refraction would be understood to one having ordinary skill in the art and would be applicable to any optical laminate.

The Examiner maintains that the references Sakai et al., Van der Werf et al., and Yuasa et al. in combination render obvious the refractive index variation in the overall laminate set forth in applicants' claim 1. The principles of optical diffraction/refraction would be understood to one having ordinary skill in the art and would be applicable to any optical laminate.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GERARD T. HIGGINS whose telephone number is (571)270-3467. The examiner can normally be reached on M-F 10am-8pm est. (Variable one work-at-home day).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Ruthkosky can be reached on 571-272-1291. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Ruthkosky/
Supervisory Patent Examiner, Art Unit 1785

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/G. T. H./
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